

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
12 April 2001 (12.04.2001)

PCT

(10) International Publication Number
WO 01/24655 A1

(51) International Patent Classification⁷: A45C 13/38,
A45F 3/08, B62B 3/00, 3/02

(21) International Application Number: PCT/AU00/01207

(22) International Filing Date: 4 October 2000 (04.10.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
53531/99 7 October 1999 (07.10.1999) AU

(71) Applicant and
(72) Inventor: WANG, Chi, Quang [AU/AU]; Kilsyth Avenue
16, Burwood, Victoria 3125 (AU).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ,

DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM,
TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

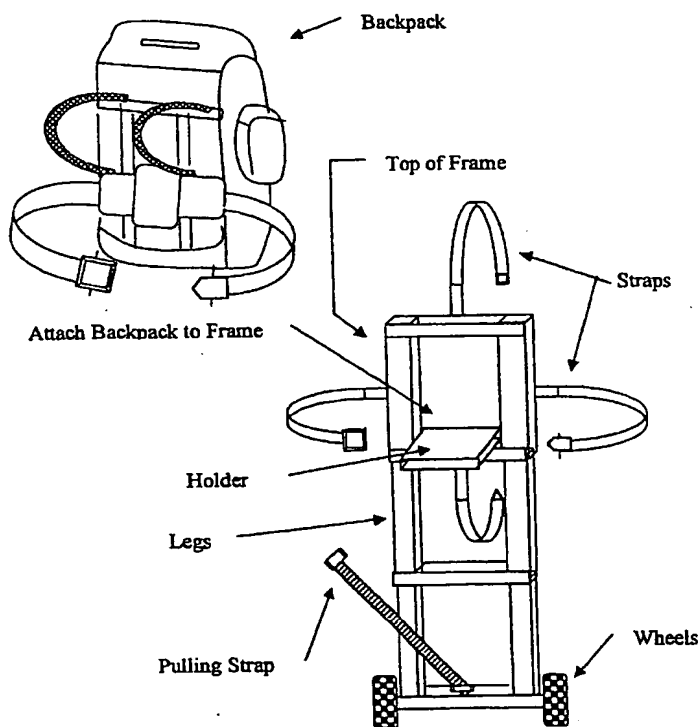
(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG,
CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— With international search report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: BACKPACK TROLLEY



Backpack Trolley

(57) Abstract: A backpack trolley having a frame with a holder for a backpack attached to the frame, the backpack supported by the holder with fasteners and straps. The trolley has adjustable extended legs having wheels contacting the ground surface. The device is strapped to the user's back with fasteners, which inclines at an angle to the user's back in such manner that the weight of the trolley and its contents are supported by the trolley and not by the user. The legs and frame of the device can be height adjusted to provide better balance and support.



WO 01/24655 A1

Invention Title: BACKPACK TROLLEY

The following statement is a full description of this invention, including
5 the best method of performing it known to me:

TECHNICAL FIELD

The invention relates to a device called **BACKPACK TROLLEY**,
which may be used by a person for carrying a backpack, bag, or a load for
10 travelling, or for everyday use.

BACKGROUND ART

People who use a backpack for travelling or to carry his/ her personal
items such as books or clothes, when mounted or strapped on the user's
15 back, the heavy weight of the backpack and its contents usually cause
back ache, soar back, shoulders ache, tiredness, and spinal injuries.
There are a few existing products can assist with the problems of carrying
a heavy load for traveller or everyday user, but none have solved the
problems as mentioned above. This new invention called **BACKPACK**
20 **TROLLEY**, however, can solve those problems.

There are three types of products existing in the market that are known to
me, namely a Backpack, a Trolley, or a Trolley Bag which have the
problems as follows:

25

Problems with Backpack

The major problems with the existing backpack are that when the
backpack is mounted on the back of the user, the user has to carry the full

weight of the backpack and the contents in the backpack, which create the following problems:

The user will develop tiredness, sore back, soar shoulders, and even risking spinal injuries while carrying the backpack due to the heavy weight of the backpack and its contents.

A backpack user who use a backpack and who is of older age, or who is not fit will develop the problems as mentioned in (1) above, and can not carry a backpack for an extended amount of time and distance.

10 ***Problems with Trolley***

The problems with the existing trolley are that a trolley can only support the weight of the backpack only when the backpack is dismounted from the back of the user. The user can only pull or push the trolley with the backpack in this manner while the backpack is fastened to the trolley but not while it is mounted on the back of the user.

Another problem with a Trolley is that in the manner of fastening the backpack to the trolley and pulling or pushing the trolley it gives less freedom of movement for the user, it is not convenient, and it is not suitable for long distance walk, it is not suitable for use on surfaces which are not even or soft. A trolley can not give as much freedom of movement as a Backpack.

When the backpack is strapped to the back of the user, the user can move in any direction easily and can move faster than when the user has to pull the bag by hand with a trolley. A trolley when use with a backpack is not suitable for bush walking, camping, and is not convenient and suitable and easy for user to board train, car, or bus, air plan, boat, ship, because the user has to lift the backpack and the trolley up to board the vehicle

Problems with Trolley Bag

A trolley bag has wheels attached to the bottom end of the bag, and can be wheeled along on the ground surface by the user holding the extended -
5 handle of the trolley bag.

The problems with the existing trolley bag are that a Trolley Bag can only support the weight of the bag and its contents while the trolley bag is wheeled on the ground surface, but when the trolley bag is mounted on the back of the user, the user carries the full load and weight of the trolley
10 bag, and will have the same problems with a Backpack as mentioned above.

Trolley bag can not be carried on the back of the user, the only way the user can conveniently and easily move the bag is by pulling it, but not strapping it to the user's back, thus restrict the movement of the user.

15 A trolley bag can not provide any supporting to the weight of the bag and its contents while it is mounted on the back of the user.

DISCLOSURE OF THE INVENTION

The above mentioned problems can be overcome by the present invention, which provides a BACKPACK TROLLEY, from now on the Device. The Device comprises the Frame, and the Holder, where the Backpack is attached to and supported by the Frame and the Holder respectively with fasteners and straps; the legs extended from the top part of the Frame to the ground surface to support the weight of the backpack. The wheels are attached to the lower end of the legs to assist with movement of the Device. While it is designed for the legs of the Device to be adjustable according to the height of the user for better support of the weight of the Device and its contents, it is also convenient for storing the Device, or converted into either a horizontal trolley, or vertical trolley, when it is retracted to its minimum size. The Device can provide extra function for resting for the user while the Device is mounted on the user's back. The user simply stands and balances himself/ herself so that the Device stays in the near vertical position where the Frame and Legs of the Device support the full weight of the Device and its contents. The advantage of resting in such manner is that the user can prevent risks of back injuries from mounting and/ or dismounting the heavy weight of the Device and its contents.

Best mode of carrying out the invention

The Device is designed such that it has the Frame, attached vertical to near the middle part of the Frame there is the Holder where a backpack is supported. The legs, which are extended or retracted from or into the

5 Frame, have wheels at the lower end of them for ease of movement. Straps and fasteners are used to strap a backpack to the Frame, and to the back of the user. A "Pulling Strap" is used to fasten the legs of the Device to the backpack or the waist of the user for assisting with pulling the Device when the Device is mounted on the back of the user. The Device

10 when mounted on the back of the user, is almost completely self supported by the Frame and its legs when the legs are extended to the user's desired height, thus the user purely balances the Device and carries very little weight of the Device and its contents. The design is done such manner to assist the user to purely pull or push the Device, but not to

15 carry the weight of the Device and its contents.

In one form of the invention, the original backpack which is attached to the Device, can be removed and replaced with a different backpack or a bag while allowed this different backpack or bag to be carried in the same

20 manner as the original backpack.

In another form of the invention, the Device can be designed to have, but not limited to, one or more Frames, one or more legs with one or more wheels, one or more gliders, or any combination of these.

25

The Device when retracted and dismounted from the user's back, can be used as a vertical trolley.

The Device when retracted, and dismounted from the user's back, can be used as a horizontal trolley, with wheel or wheels attached at the top part of the Frame,

- 5 The Legs of the Device can be extended or retracted by means of using latches as locking mechanism when the legs are extended or retracted. The latches for locking as mentioned above for locking the length of the legs can be activated by using methods such as, but not limited to, buttons or strings.

10

The Device can be produced from, and not limited to the following materials, such as tubes, moulded plastic, metal, alloy, timber, extruded plastic or metal, or a combination of the above materials and method of productions, or any suitable materials with suitable physical property to support a desired weight of the Device and its contents.

15

A user can use the Device for or with, but not limited to, a backpack, bag, school bag, shopping bag, luggage, or travel bag.

- 20 The Device can provide easy mounting and dismounting or strapping on the user's back or body.

The Device can be adjusted to a desired height, thus can be used by any people at any standard height; can be used by children, adult, female,

- 25 male, older age, younger age people,

The device has the following advantages:

5 The weight of the backpack and its contents are not exerted on the back of the user when the device is mounted on the back of the user, but the weight of the backpack and its contents are exerted on the Device, and supported by the legs of the Device. Thus the user actually carries very little weight of the Device and its contents.

10 When the Device is mounted on the user's back, the user purely pulls or pushes the Device, but not carries the Device and its contents.

The Device, when used by a user in the above mentioned way, the user can travel long distance and time without developing soar back,
15 shoulders, tiredness, or spinal injuries, while having a lot of freedom of movement, when comparing to using an ordinary Backpack.

The application of the device can be described as follows, but are not limited only to those listed below:

20

- For Travelling, camping, and hiking, trekking, bush walking.
- For carrying School bag, books, binders, documents.
- For carrying travel goods instead of using, eg. luggage, backpack,
25 or bag.
- Suitable for the army.
- Suitable for large and heavy weight load.

Brief Description of drawings

To assist with the understanding of the invention, reference will now be made to the accompanying drawing which show one example of the invention. In the drawings:

Fig 1 shows one example of the Device according to this invention.

- The top part of the Device, which is
- 10 • The Frame, which has
- The Holder attached to it, and is moveable via joints or hinges,
- The Legs, which can be extended from the Frame,
- The wheels, which are attached to the lower part of the Legs,
- The Straps, for fastening and strapping the Backpack,
- 15 • The Backpack, where things can be stored,
- The Pulling Strap, for assisting with pulling the Device.

Fig 2 shows an application of such Device.

The claims defining the BACKPACK TROLLEY invention are as follows:

5

(1) The BACKPACK TROLLEY, from now on the Device, comprises the top part of the Device which is the Frame, and the Holder, which extended vertical from the top part of the Device, where the Backpack is attached to with straps and fasteners, and supported by the Holder respectively; the Legs extended to the ground surface from the top part of the Device to support the weight of the Device and its contents, there are wheels attached at the lower end of the Legs to assist with movement of the Device; the Device inclines a small angle when it is strapped or mounted onto the user's back in such manner that when the legs are extended, the weight of the Device and its contents are carried and supported by the legs, thus the Device, but not by the user; the Device can be adjusted according to the height of the user to provide balance and support to the Device and the weight of its contents.

20

(2) As claimed in Claim (1) above, the legs of the Device are designed to be adjustable in height by the user as desired to provide support and balance to the Device and the weight of its contents.

25

(3) As claimed in Claim (1) above, when the Backpack of the Device is detached from the Device, and can be replaced with any different backpack, after this different backpack is properly strapped and fastened, it can serve the same function as the original removed Backpack.

- (4) As claimed in Claim (1) above, the Device can be used as a trolley in a vertical position when the legs are retracted.
- 5 (5) As claimed in Claim (1) above the Device can be used as a trolley in a horizontal position when the legs are retracted, when an additional wheel, or wheels are attached to the top part of the Device.
- 10 (6) As claimed in Claim (1) above, the Device also provides the resting support function for the user while the Device is mounted on the user's back, so that when the user wishes to rest while the backpack is mounted on the user's back, the user does not have to dismount the Device.
- 15 (7) As claimed in Claim (1) and (2) above, when the legs of the Device are retracted, the Device can be used in a similar manner as a backpack.
- 20 (8) As claimed in Claim (1) above, the wheels of the Device can be replaced with any different wheel sizes.
- (9) As claimed in Claim (1) and (8) above, the wheels can be replaced with other means, but not limited to, such as castors, rollers or
25 glider for supporting the movement for the Device and/ or for reducing friction for different ground surface.

- (10) As claimed in Claim (1) above, the legs of the Device can be designed with a single Leg or multiple Legs for supporting the Device and/ or for maintaining the balance for the Device.
- 5 (11) As claimed in Claim (1) above, the Frame of the Device can be designed with a single Frame or multiple Frames for supporting the Device and/ or for maintaining the balance for the Device.
- 10 (12) As claimed in Claim (1) above, the Device can be made or constructed of material such as aluminium, metal, alloys, timber, plastic, plastic or metal extruded, or a combination of one or more of the above.
- 15 (13) As claimed in Claims (1), (11) and (12) above, the Device can be made or constructed with different shapes of materials, but not limited to the following shapes, such as round, square, rectangular, triangular, flat bar, I-shape, U-shape, oval shape tubes or bar, or a combination of one or more of the above.
- 20 (14) As claimed in Claims (1) above, the Frame, the Legs, and other parts of the Device can be joined together by means of, and not limited to, welding, fasteners, T-Section-Joints, I-Section-Joints, hinges, links where suitable and applicable.
- 25 (15) As claimed in Claims (1) and (2) above, the Legs and the Frame of the Device can be retracted or extended by sliding the one part of the legs into other part of the legs.

- (16) As claimed in Claims (1) and (2) above, the Legs and the Frame of the Device can be retracted or extended by folding or unfolding one part of the legs into other part of the legs, and/ or the Frame.
- 5 (17) As claimed in Claims (1) and (2), the Legs and the Frame of the Device, can be retracted or extended by, but not limited to these methods, a combination of sliding and folding, from one part of the legs into other part of the legs.
- 10 (18) As claimed in Claims (1) and (2), the Legs and the Frame of the Device can be retracted or extended either manually or automatically by using elastic means, but not limited to materials such as springs or elastic strings.
- 15 (19) As claimed in Claim (1) and (2) above, the Legs and the Frame of the Device can be retracted or extended by, but not limited to the following methods such as folding, unfolding, pulling and/ or pushing the legs with hand or strings attached to the legs and/ or the Frame.
- 20 (20) As claimed in Claim (1) and (2) above, the legs of the Device can be retracted or extended by, and not limited to, such as pushing or pulling a button or buttons where it activates latches to lock or unlock the in-built mechanism for retraction or extension of the
- 25 legs.
- (21) As claimed in Claims (1) and (2) above, the springs, elastics strings or similar mechanism or property is to provide such springing and

retracting actions, are in-built into the Device for automatic retraction and extension of the Legs and the Frame.

- 5 (22) As claimed in Claim (1) above, the Holder which is to support the backpack is designed in manner such that there is no need to drill through holes to the Frame with fasteners such as bolts and nuts, but the holding and staying in the position of the holder are from both the clamping and the bending moment of the weight of the horizontal joint bar and the Holder on the Frame.
- 10

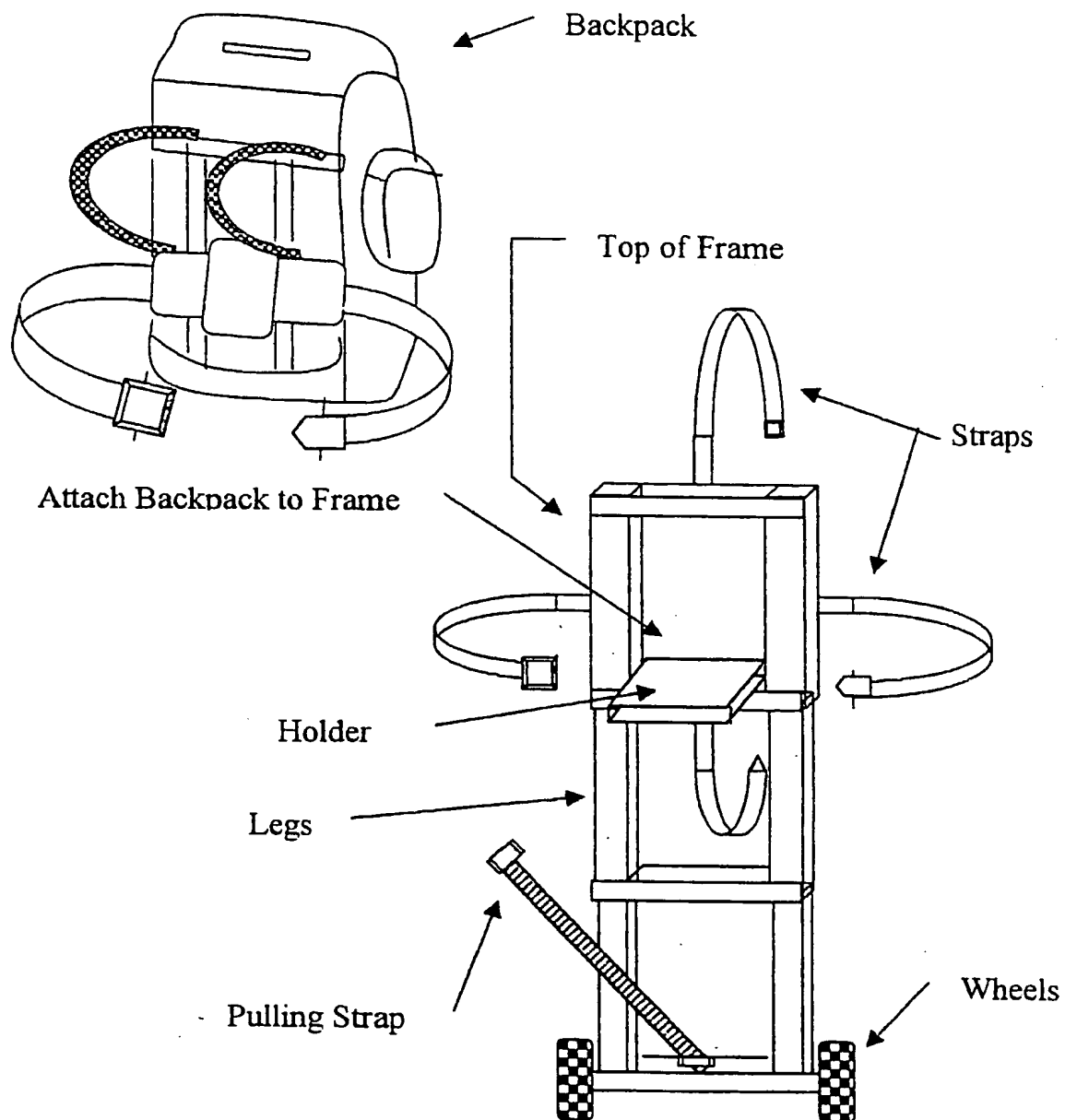


Figure 1. Backpack Trolley

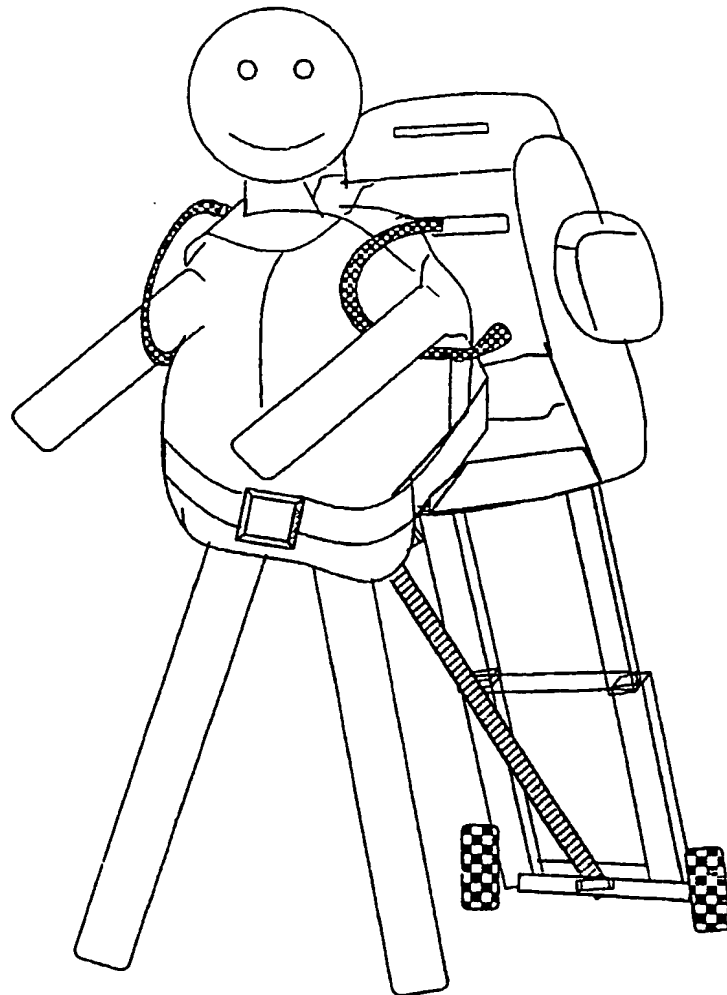


Figure 2. Application of Backpack Trolley

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU00/01207

A. CLASSIFICATION OF SUBJECT MATTERInt. Cl. ⁷: A45C 13/38, A45F 3/08, B62B 3/00, 3/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A45C, A45F, B62B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DWPI, USPTO Internet Site

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 645 486 A (PICCOLI) 12 October 1990 See drawings.	1-4, 7-22
X	US 4 236 723 A (LEMMON) 2 December 1980 See abstract, drawings	1-4, 8-22
X	EP 719 511 A (HILDEBRANDT) 3 July 1996 See drawings	1-4, 7-14

☒ Further documents are listed in the continuation of Box C ☒ See patent family annex

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

12 January 2001

Date of mailing of the international search report

16 January 2001

Name and mailing address of the ISA/AU

AUSTRALIAN PATENT OFFICE
PO BOX 200, WODEN ACT 2606, AUSTRALIA
E-mail address: pct@ipaustalia.gov.au
Facsimile No. (02) 6285 3929

Authorized officer

BRENDAN BOURKE

Telephone No : (02) 6283 2148

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU00/01207

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 42 02 135 A (EWERS) 29 July 1993 See drawings	1-3, 7-14

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU00/01207

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report			Patent Family Member
FR	2645486	NONE	
US	4236723	NONE	
EP	719511	DE	4447319
DE	4202135	NONE	
END OF ANNEX			